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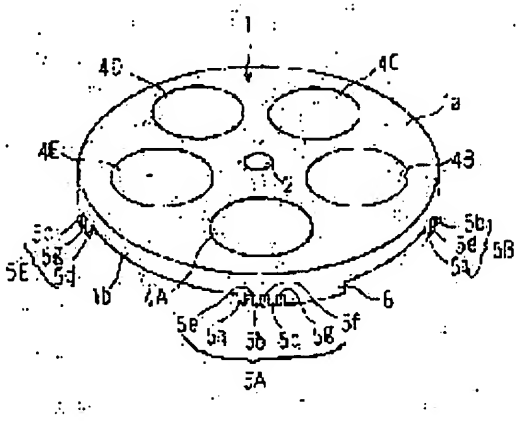
(54) DISK REPRODUCING DEVICE

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a disk reproducing device in which a rotary tray is rotated in such a manner that disk loading sections of assigned numbers can be stopped at a reproduction start position in the shortest time by the simple constitution of counting pulse signals for position detection.

SOLUTION: This disk reproducing device is provided with control means for performing the following control: When a reproduction command signal to assign any one of the numbers allocated to the disk loading sections 4A to 4E is inputted, the rotary tray 1 is driven to rotate in a direction toward the smallest number side from the largest number side of the disk loading sections 4A to 4E and thereafter if the count value from a counter is the number of pulses to indicate the detection of a rotation reference section 6, the count value to be inputted next is compared with the number of the assigned disk loading section and the rotation of the rotary tray 1 is decelerated at the point of the time the count value indicating a revolution deceleration portion 5g of the number is inputted and further the rotation is stopped at the point of the count value indicating a rotation stop portion 5g.



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* NOTICES *

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DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] This invention relates to the disk regenerative apparatus which reproduces the recording information of the optical disk laid in two or more disk installation sections, and relates to the disk regenerative apparatus which controls rotation of a rotary tray by the number of inputs of a detection pulse signal especially.
[0002]
[Description of the Prior Art] After the disk regenerative apparatus which reproduces two or more disks is arranging in a rotary tray (the same is said of a turntable or the round roulette) the disk installation section which lays a disk and carries out the rotation drive of the rotary tray according to selection actuation of remote control etc., when the specified disk installation section arrives at a playback location, it is made to stop, and it reproduces the recording information of a disk. The disk player which formed in an example of such a disk regenerative apparatus the notching crevice which shows a halt location to the skirt-board section of a turntable is known (refer to JP,6-168538,A). This thing makes the notching crevice prepared corresponding to two or more disk installation sections on a turntable the large slit section for detection of notching width of face. [one or more] And the photodetector which irradiates light at the skirt-board section and detects passage light from the notching crevice of the slit section for detection is attached.
[0003] Furthermore, while inputting the detecting signal obtained from this photodetector and distinguishing the disk number corresponding to the disk installation section, and the halt location of a turntable, it has the control circuit which controls motorised by that distinction output, and is constituted. When a photodetector detects the notching crevice where notching width of face is large and this disk player judges the time of this notching crevice passing a photodetector to be the halt location of a turntable, halt control of the motor is carried out so that rotation of this turntable may be suspended. Therefore, the reading mistake of the photodetector which originated in the slit section for detection conventionally is canceled.
[0004] Moreover, this invention person etc. proposed previously the disk regenerative apparatus which can enable exact selection of a disk, even if rotation fluctuation arose on the rotary tray (refer to JP,10-188430,A). Two or more disk installation sections which lay a disk are prepared, and this disk regenerative apparatus forms the slot which shows the address corresponding to each halt location in the periphery section of a rotary tray which has a rotation halt location corresponding to these, makes it generate the pulse signal of predetermined width of face in this slot, and chooses a halt location as it. Moreover, the slot which makes the periphery section of a rotary tray generate the pulse signal of the width of face of criteria is prepared. And the recording information of said disk is reproduced by rotating a rotary tray and suspending rotation in which location of said disk installation section.
[0005] Under the present circumstances, even if it may change the rotational speed of a rotary tray or may vary, since fluctuation and variation of that rotational speed serve as change of the pulse width of the pulse signal obtained when the slot for synchronization pulse generation is detected, and the pulse

width of the pulse signal obtained when the slot for pulse generation for disk selection is detected and appear, they become fixed [the ratio of the pulse width of both pulse signals]. Therefore, fluctuation and variation of the rotational speed of a rotary tray are enabled to choose a disk independently, and a reliable disk regenerative apparatus can be obtained.

[0006] Furthermore, the loading condition of the disk on round roulette is judged using a decision signal, and the round roulette control approach which controls the location of round roulette is also learned (refer to JP,10-188430,A). When a beam of light scans this control approach through the loading plate which is not loaded with the 1st disk in the case of rotation of round roulette, photosensor generates a pulse signal. this pulse signal -- initiation and a termination code, and the 1st recognition signal -- and it has the DISUKURODO detecting signal (DLDP) further the 2nd recognition signal (ID 1-1, ID 1-2).

[0007] And a disk-swapping machine confirms whether it was appropriately loaded with the disk on round roulette using a pulse signal by comparing the 1st time interval (A) between the 2nd time interval between the time of day which the rising edge of DLDP in the pulse signal for controlling the location of round roulette produces, and the time of day which the rising edge of ID-2 produces (B), and the time of day which the falling edge of ID-1 produces and the time of day which the rising edge of DLDP produces. Thus, since the pulse signal which controls the location of round roulette is used, it can load with a disk much more correctly on round roulette.

[0008]

[Problem(s) to be Solved by the Invention] By the way, each of front 2 persons who rotates a turntable and a rotary tray among the above-mentioned conventional disk regenerative apparatus has composition which detects a pulse signal and a disk playback location is made to carry out a rotation halt. Although a turntable prepares the slit section for pulse generating in the skirt-board section and the rotary tray forms the slot for pulse generating in the periphery section, since fabrication of these disc-like body of revolution is carried out by synthetic-resin material, deformation may arise in the whole which manufacturing with high precision spreads in difficulty, or it may be manufactured in the condition of having bent. Then, the error arose in the slit width of the skirt-board section, or the flute width of the periphery section, and since the width of face of the pulse signal generated at the time of rotation also changed delicately, it had the problem in which the timing of a halt location shifts and a disk-swapping mistake is caused.

[0009] Moreover, the latter round roulette control approach also judges whether it was appropriately loaded with two or more disks on round roulette using the pulse signal. Since this round roulette is formed in disc-like [flat] by synthetic-resin material, like the above-mentioned, it is turned at and manufactured or deformation tends to produce it at the time of use. Then, when the width of face of the pulse signal outputted from the photosensor which detects the passage light of ID hole changed and it loaded with a disk on round roulette, there was a possibility that a mistake might occur. Furthermore, if a user touched said turntable, a rotary tray, or round roulette and may have stopped rotation and migration compulsorily, since a criteria location would shift, when it was made to rotate at the time of the next playback, the time amount width of face of a pulse signal changed, and the problem of it becoming impossible for a playback mistake to arise too or to perform proper disk loading was left behind.

[0010] It was originated in view of the above-mentioned technical problem, and this invention aims at offering the disk regenerative apparatus which makes a playback starting position rotate a rotary tray for the disk installation section of an assignment number possible [a halt] by the shortest time amount by the easy configuration which counts the pulse signal for location detection.

[0011]

[Means for Solving the Problem] In order to attain the above-mentioned purpose, among this inventions invention according to claim 1 In the disk regenerative apparatus with which the disk installation section which lays a disk rotates the prepared rotary tray, suspends rotation in which location of said disk installation section, and reproduces the recording information of said disk Each becomes the periphery section of said rotary tray from a crevice, and adjoins and forms in it a group with the rotation halt

section which shows the rotation moderation section which shows the rotation moderation location of said rotary tray corresponding to each location of said disk installation section, and a rotation halt location. Between the group corresponding to the first number, and the group corresponding to the 2nd number, among the numbers assigned to said disk installation section, respectively A detection means to prepare the rotation criteria section which consists of a crevice and shows the rotation initiation criteria location of said rotary tray, to detect said rotation moderation section, the rotation halt section, and the rotation criteria section, and to output a pulse signal, When the playback command signal which specifies any of the counter which counts the pulse signal from this detection means, and the number assigned to said disk installation section they are inputs, If the counted value from said counter is the pulse number which shows detection of said rotation criteria section after making the rotation drive of said rotary tray carry out in the direction which goes to a small number side from the large number side of said disk installation section Next, the counted value to input is compared with the number of said assignment disk installation section. Rotation of said rotary tray is slowed down at the input time of the counted value which shows the rotation moderation section of this number, and it is characterized by having the control means which performs control which stops rotation further at the input time of the counted value which shows the rotation halt section.

[0012] Moreover, invention according to claim 2 rotates the rotary tray on which two or more disk installation sections which lay a disk were prepared. In the disk regenerative apparatus which rotation is suspended [regenerative apparatus] in which location of said disk installation section, and reproduces the recording information of said disk Each becomes the periphery section of said rotary tray from a crevice or heights, and adjoins and forms in it the rotation halt section which shows the rotation moderation section which shows the rotation moderation location of said rotary tray corresponding to each location of said disk installation section, and a rotation halt location. A detection means to prepare the rotation criteria section which becomes any between class [these] to be from a crevice or heights, and shows the rotation initiation criteria location of said rotary tray, to detect said rotation moderation section, the rotation halt section, and the rotation criteria section, and to output a pulse signal, When the playback command signal which specifies any of the counter which counts the pulse signal from this detection means, and the number assigned to said disk installation section they are inputs, If the counted value from said counter is the pulse number which shows detection of said rotation criteria section after carrying out the rotation drive of said rotary tray Next, the counted value to input is compared with the number of said assignment disk installation section. Rotation of said rotary tray is slowed down at the input time of the counted value which shows the rotation moderation section of this number, and it is characterized by having the control means which performs control which stops rotation further at the input time of the counted value which shows the rotation halt section. Moreover, when the playback command signal which said control means memorizes the number of the disk installation section of the location in memory at the time of a rotation halt of said rotary tray, and then specifies any of the disk installation section they are inputs invention according to claim 3, After computing the pulse number from said halt location to a playback starting position and carrying out the rotation drive of said rotary tray, the sequential comparison of the counted value from said counter is carried out with the data of said memory. It is characterized by performing control which slows down rotation of said rotary tray in the rotation moderation location in the disk installation section concerned when in agreement, and carries out a rotation halt further in a rotation halt location. Moreover, it is characterized by invention according to claim 4 performing control whose power up said control means makes suspend said rotary tray in a rotation initiation criteria location. Moreover, said rotation criteria section is characterized by coming to prepare invention according to claim 5 between the number of the beginning of said disk installation section, and the last number.

[0013]

[Embodiment of the Invention] Hereafter, the gestalt of operation of this invention is explained, referring to the example of illustration. The perspective view showing the rotary tray of the disk regenerative apparatus which drawing 1 requires for this invention, and drawing 2 are the mimetic diagrams showing the structure of the disk detecting element of this rotary tray. This disk regenerative

apparatus is a disk player which reproduces the recording information of the disk laid in the disk installation sections 4A-4E arranged in the rotary tray 1, is equipped with photosensor 8, a counter 9, remote control 12, and control-section 15 grade, and is constituted. It is disc-like, the shaft of a motor 3 is connected with the revolving shaft 2 which fixed in the center, and the rotary tray 1 carries out a rotation drive by this motor 3. And the disk installation sections 4A-4E which can lay the disk of five sheets open regular intervals, and are arranged in the top-face 1a side.

[0014] these disk installation sections 4A-4E -- the forward hand of cut (clockwise rotation) of the rotary tray 1 -- meeting -- the 1- the number to the 5th is assigned. moreover, the 1- as shows this rotary tray 1 to periphery section 1b which consists of a downward peripheral wall at drawing 2 respectively corresponding to said five disk installation sections 4A-4E -- the 5th tray detection section 5A-5E is formed at equal intervals. Furthermore, 1st tray detection section 5A by the side of 2nd tray detection section 5B was adjoined, one heights were protruded, and the rotation initiation criteria section 6 is formed. 1st tray detection section 5A is producing three crevices 5e-5g among said tray detection sections 5A-5E, respectively by protruding three heights 5a-5c on periphery section 1b. moreover, the 2- the 5th tray detection section 5B-5E is producing three crevices 5e-5g, respectively by protruding four heights 5a-5d on periphery section 1b. About Heights 5a-5d, in order to change the time amount of an output pulse, two-piece 5a of both sides and 5d are set as inside two-piece 5b, and 5c is broadly set as one half of width of face rather than this.

[0015] When the photosensor 8 (refer to drawing 3) arranged in the hoop direction of periphery section 1b by intersecting perpendicularly by this detects heights at the time of rotation of the rotary tray 1, it outputs the pulse signal for 2 seconds by the heights 5a and 5d by the side of broad, and the output of it is attained in the pulse signal for 1 second by the heights 5b and 5c by the side of narrow. Moreover, although the direction of Crevices 5e-5g makes equal the whole of each width of face, 5f of rotation halt sections and the last crevice are set [the crevice which comes first in the hand of cut (counterclockwise rotation) of the rotary tray 1] to number discernment section 5e for 5g of rotation moderation sections, and the next crevice. In addition, when it has supposed that it is still broader than said heights 5a and 5d by the side of broad and photosensor 8 detects these heights at the time of rotation of the rotary tray 1, an output of the pulse signal for several seconds is possible for the rotation initiation criteria section 6. Thus, a total of 20 heights and a total of 20 crevices are formed in periphery section 1b of the rotary tray 1. Since outputting becomes possible only for one pulse signal by this when photosensor 8 detects the convex rotation initiation criteria section 6 with rotation of the rotary tray 1, a count can be started on the basis of the present halt location of the rotary tray 1.

[0016] Drawing 3 is the block diagram showing the electric configuration of the above-mentioned disk regenerative apparatus. In this drawing, the motor by which 1 carries out a rotary tray and 3 carries out the rotation drive of the rotary tray 1, and 7 are the motorised sections which control rotation of a motor 3. Moreover, 8 is photosensor, detects the tray detection sections 5A-5E of the rotary tray 1, and the rotation initiation criteria section 6, and outputs a pulse signal to a counter 9. If a pulse signal inputs, this counter 9 will count a pulse number one by one, and will output numeric data to a control section 15. 10 is a plug cap, and if it makes spigot connection at a plug socket, it sends out alternating voltage to a power circuit 11. This power circuit 11 performs electrical-potential-difference conversion in response to alternating voltage, and supplies an electrical potential difference required for the motorised section 7, or control-section 15, others and each part of a circuit.

[0017] 12 is a remote controller (remote control) and the power key for operating a disk player in the key stroke section, a play key, the stop key, the ten key, the up-and-down key, the disk selection key, etc. are prepared. This remote control 12 will transmit the infrared signal corresponding to the contents of actuation from the transmitting section, if which key is operated. 13 is a receive section, and if an infrared signal is received, it sends out a transmission signal to a control-section 15 side. This control section 15 is the microcomputer equipped with the memory 14 which consists of a ROM and RAM, or a timer, after controlling each part of a circuit of a reversion system in response to the command signal from remote control 12 and carrying out the rotation drive of the rotary tray 1, controls rotation of the rotary tray 1 according to the counted value from said counter 9, and has the composition of stopping the

disk installation section of the disk number chosen as the playback location in which pickup was prepared.

[0018] Next, actuation of a power up is explained, referring to the flow chart of drawing 4 . When a user wants to play a desired disk where a disk is laid in the disk installation sections 4A-4E of a disk player, the power key of remote control 12 is operated first. If the control section 15 is checking the input of a power-on signal (step S11) and a power-on signal inputs when a plug 10 is inserted in a plug socket, it sends out a control signal to the motorised section 7. In connection with this, a motor 3 carries out a rotation drive and the rotary tray 1 starts counterclockwise rotation (the direction of an arrow head of drawing 2) (step S12). If this rotary tray 1 begins to rotate, it will distinguish whether the pulse signal which checks the output data of a counter 9 and shows detection of the rotation initiation criteria section 6 from photosensor 8 inputted the control section 15 (step S13).

[0019] In addition, when detecting in this rotation initiation criteria section 6, the input of one pulse signal cannot be distinguished as a time of the input of one pulse signal, since much heights are formed in periphery section 1b of the rotary tray 1, although it is good also as distinction criteria. Therefore, in this example, when switching on a power source and rotating the rotary tray 1 immediately, it has set up so that it may distinguish on the basis of the time amount width of face of an input pulse signal. That is, except for 1st tray detection section 5A, the output of the heights 5a-5d of each tray detection sections 5B-5E is enabled in the pulse signal for 3 seconds about the rotation initiation criteria section 6 to enabling the output of the pulse signal for 2 seconds and 1 second, for example. Thereby, if a pulse signal is outputted from photosensor 8 at the time of rotation of the rotary tray 1, a control section 15 will distinguish having detected the rotation initiation criteria section 6, when the pulse signal for 3 seconds inputs the data of the time amount width of face of a pulse signal to input as compared with the time data beforehand memorized by memory 14. Then, a control section 15 sends out a control signal to the motorised section 7, and decelerates rotation of a motor 3 and the rotary tray 1 (step S14).

[0020] Subsequently, it distinguishes whether one pulse signal inputted the control section 15 (step S15). And when one pulse signal inputs, it distinguishes having reached 5f of rotation halt sections of 1st tray detection section 5A, a control signal is sent out to the motorised section 7, and rotation of a motor 3 and the rotary tray 1 is stopped (step S16). At this time, 1st tray detection section 5A and 1st disk installation section 4A have attended the playback location in which pickup was prepared, and the recording information of the disk of number No.1 assigned to the disk laid in this installation section 4A becomes refreshable. Moreover, since this idle state serves as a rotation initiation criteria location of the rotary tray 1, a control section 15 makes memory 14 memorize the number data of disk No.1 (step S17), and stands by the next playback command. If the signal which specifies the number of other disks from remote control 12 inputs by this, a control section 15 can stop correctly the tray detection section corresponding to the disk of an assignment number to a playback starting position, after carrying out inverse rotation of the rotary tray 1.

[0021] Next, the actuation at the time of disk number assignment is explained, referring to the flow chart of drawing 5 . Although a control section 15 makes a power up stop 1st disk installation section 4A of the rotary tray 1 like the above-mentioned in a rotation initiation criteria location, after playback of the disk number by a user's selection is completed after that, it has meant having stopped with as in the location. Moreover, since the rotary tray 1 which a user is rotating is stopped compulsorily, a halt location always changes. However, if the counted value according to a pulse signal carries out a sequential input at a control section 15 and rotation of the rotary tray 1 suspends this disk player with rotation of the rotary tray 1, the data in which that disk number is shown are memorized by memory 14. Therefore, when a user chooses the disk number of arbitration by the key stroke of remote control 12, a halt of the rotary tray 1 is attained in a playback location without malfunction. In this case, after a control section 15 asks for the necessary pulse number "z" to the disk number demanded from the data "x" of the present disk number recorded on said memory 14, and the data "y" of the demanded disk number based on the formula programmed beforehand and rotates the rotary tray 1, it is made to stop in the location which reached this pulse number. In addition, since 5f of rotation halt sections of each tray detection section has stopped in the rotation initiation criteria location when a control section 15 counts

a pulse number, it is made to start from heights 5a which adjoined number discernment section 5e.
[0022] First, a control section 15 calculates x<y in step S21. Consequently, if x is a value smaller than y, it will progress to step S22, and if it becomes a large value, it will progress to step S23. For example, since x is smaller than y at x= 1 and y= 5, it progresses to step S22 and asks for z by the formula of [z= 4 (y-x)-1] to reproduce [user] the disk number 5. Consequently, it is set to z= 15 and it turns out that the necessary pulse number to the disk number demanded is 15 pieces. Next, a control section 15 calculates z< 8 in step S24. Consequently, since z is size, it progresses to step S25 and distinguishes whether it is z= 11 from 8. Here, since it is not z= 11, it progresses to step S26 and replaces with z'=3. And a control section 15 distinguishes whether in response to the data of a pulse number inputted from a counter 9, necessary pulse number z' (here three pieces) to the disk number demanded passed, after rotating the rotary tray 1 counterclockwise (step S28) (step S29).
[0023] Since a count is started from heights 5b at this time, counted value is set to 3 by counted value by the following heights 5a by 5d of heights of 2 and 5th tray detection section 5A. When this counted value 3 inputs a control section 15, it reaches 5th tray detection section 5A, it distinguishes having detected 5d of that rotation moderation section, and decelerates rotation of the rotary tray 1 (step S32). Then, it distinguishes whether one more pulse signal inputted the control section 15 (step S33). And when heights 5c of the rotary tray 1 is passed and one pulse signal inputs, it distinguishes having detected 5f of rotation halt sections of 5th tray detection section 5A, and rotation of the rotary tray 1 is stopped (step S34). Thereby, 5th tray detection section 5A and 5th disk installation section 4E attend the playback starting position in which pickup was prepared. Therefore, disk No.5 which the user chose become refreshable for a short time. Then, a control section 15 makes memory 14 memorize the data in which number No.5 assigned to the disk laid in 5th disk installation section 4E are shown (step S35), and ends the actuation at the time of disk selection.
[0024] Moreover, if remote control 12 performs selection actuation when a playback starting position wants to reproduce [a user] disk No.3 in the condition that 5th tray detection section 5E corresponding to disk No.5 has stopped, a control section 15 will control rotation of the rotary tray 1, after asking for necessary pulse number z as mentioned above. Since x is larger than y at x= 5 and y= 3 at this time, it progresses to step S23 and asks for z by the formula of [z= 19-4 (x-y)]. Consequently, it turns out that it is the necessary pulse number z= 11 to the disk number demanded. Next, a control section 15 calculates z< 8 in step S24. Consequently, since z is size, it progresses to step S25 and distinguishes whether it is z= 11 from 8. Here, since it is z= 11, it progresses to step S27 and replaces with z'=7.
[0025] And a control section 15 distinguishes whether in response to the data of a pulse number inputted from a counter 9, necessary pulse number z' (here seven pieces) to the disk number demanded passed, after rotating the rotary tray 1 counterclockwise (step S28) (step S29). Also at this time, a count is started from heights 5b and counted value is set to 7 by 5d of heights of 3rd tray detection section 5C. When this counted value 7 inputs a control section 15, it reaches 3rd tray detection section 5C, it distinguishes having detected 5d of that rotation moderation section, and decelerates rotation of the rotary tray 1 (step S32). And steps S33 and S34 are processed like the above-mentioned, and after making memory 14 memorize the data in which number No.3 assigned to the disk laid in 3rd disk installation section 4C are shown (step S35), the actuation at the time of disk selection is ended.
[0026] By the way, since x is smaller than y at x= 1 and y= 2 when actuation in which are in the condition which 1st tray detection section 5A corresponding to disk No.1 has stopped to the playback starting position, for example, a user reproduces disk No.2 is carried out, it progresses to step S22 and asks for z by the formula of [z= 4 (y-x)-1]. Consequently, it is set to z= 3 and it turns out that the necessary pulse number to the disk number demanded is three pieces. Next, a control section 15 calculates z< 8 in step S24. Consequently, it distinguishes whether from 8, since z was smallness, after it progressed to step S30 and rotated the rotary tray 1 clockwise, in response to the data of a pulse number inputted from a counter 9, necessary pulse number z (here three pieces) to the disk number demanded passed it (step S31). Since a count is started from heights 5c at this time, counted value is set to 3 by counted value by the following heights 6 by heights 5a of 2 and 2nd tray detection section 5B. When this counted value 3 inputs a control section 15, it reaches 2nd tray detection section 5B, it distinguishes

having detected that rotation moderation section 5a, and decelerates rotation of the rotary tray 1 (step S32). And steps S33 and S34 are processed like the above-mentioned, and after making memory 14 memorize the data in which number No.2 assigned to the disk laid in 2nd disk installation section 4B are shown (step S35), the actuation at the time of disk selection is ended. Thereby, playback of disk No.2 is attained by the shortest time amount.

[0027] Drawing 6 is the mimetic diagram showing the structure of the disk detecting element of the rotary tray concerning the gestalt of other operations. This rotary tray 21 is what adjoined and formed in 1st tray detection section 5A by the side of 5th tray detection section 5E the rotation initiation criteria section 6 prepared in said rotary tray 1, and a fundamental configuration is abbreviation identitas and it omits detailed explanation. Among the tray detection sections 5A-5E, 1st tray detection section 5A had three heights 5b-5d in periphery section 1b, and three crevices 5e-5g have produced it, respectively. moreover, the 2- the 5th tray detection section 5B-5E had four heights 5a-5d in periphery section 1b, and three crevices 5e-5g have produced it, respectively. Thereby, 5f of rotation halt sections and the last crevice turn into [the crevice which comes first in the hand of cut (clockwise rotation) of the rotary tray 1 among each crevices 5e-5g / rotation moderation section 5e and the next crevice] 5g of number discernment sections.

[0028] Next, actuation of a power up is explained, referring to the flow chart of drawing 7 . When a user wants to play a desired disk where a disk is laid in the disk installation sections 4A-4E of a disk player, the power key of remote control 12 is operated first. If the control section 15 is checking the input of a power-on signal (step S41) and a power-on signal inputs when a plug 10 is inserted in a plug socket, it sends out a control signal to the motorised section 7. In connection with this, a motor 3 carries out a rotation drive and the rotary tray 1 starts clockwise rotation (the direction of an arrow head of drawing 6) (step S42). If this rotary tray 1 begins to rotate, it will distinguish whether the pulse signal which checks the output data of a counter 9 and shows detection of the rotation initiation criteria section 6 from photosensor 8 inputted the control section 15 (step S43). Here, if the pulse signal which shows detection of the rotation initiation criteria section 6 inputs, a control section 15 will send out a control signal to the motorised section 7, and will decelerate rotation of a motor 3 and the rotary tray 1 (step S44).

[0029] Subsequently, it distinguishes whether one pulse signal inputted the control section 15 (step S45). Here, since only the numeric data of an input pulse signal is checked, when one pulse signal inputs, it distinguishes having reached rotation moderation section 5e of 1st tray detection section 5A, a control signal is sent out to the motorised section 7, and rotation of a motor 3 and the rotary tray 1 is decelerated (step S45). Then, it distinguishes whether one more pulse signal inputted the control section 15 (step S46). And when one pulse signal inputs, it distinguishes having reached 5f of rotation halt sections of 1st tray detection section 5A, a control signal is sent out to the motorised section 7, and rotation of a motor 3 and the rotary tray 1 is stopped (step S47). At this time, 1st tray detection section 5A and 1st disk installation section 4A have attended the playback location in which pickup was prepared, and the recording information of the disk of number No.1 assigned to the disk laid in this installation section 4A becomes refreshable. Moreover, since this idle state serves as a rotation initiation criteria location of the rotary tray 1, a control section 15 makes memory 14 memorize the number data of disk No.1 (step S48), and stands by the next playback command. If the signal which specifies the number of other disks from remote control 12 inputs by this, a control section 15 can stop correctly the tray detection section corresponding to the disk of an assignment number to a playback starting position, after carrying out forward rotation of the rotary tray 1.

[0030] Next, the actuation at the time of disk number assignment is explained, referring to the flow chart of drawing 8 . After a control section 15 asks for the necessary pulse number "z" to the disk number demanded from the data "x" of the present disk number recorded on said memory 14, and the data "y" of the demanded disk number based on the formula programmed beforehand and rotates the rotary tray 1 also in this case, it is made to stop in the location which reached this pulse number. In addition, since 5f of rotation halt sections of each tray detection section has stopped in the rotation initiation criteria location when a control section 15 counts a pulse number, it is made to start from heights 5c which adjoined this. First, a control section 15 calculates $x<y$ in step S51. Consequently, if x is a value smaller

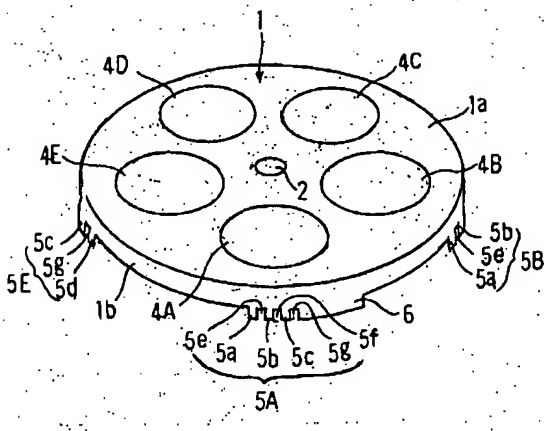
than y, it will progress to step S52, and if it becomes a large value, it will progress to step S53.
[0031] For example, since x is smaller than y at x= 1 and y= 2, it progresses to step S52 and asks for z by the formula of [z= 4 (y-x)-1] to reproduce [user] the disk number 2. Consequently, it is set to z= 3 and it turns out that the necessary pulse number to the disk number demanded is three pieces. Subsequently, a control section 15 distinguishes whether in response to the data of a pulse number inputted from a counter 9, necessary pulse number z (here three pieces) to the disk number demanded passed, after making rotation of the rotary tray 1 start (step S54) (step S55).
[0032] Since a count is started from heights 5c at this time, counted value is set to 3 by counted value by the 5d of the heights as follows by heights 5a of 2 and 2nd tray detection section 5B. When this counted value 3 inputs a control section 15, it reaches 2nd tray detection section 5B, it distinguishes having detected that rotation moderation section 5e, and decelerates rotation of the rotary tray 1 (step S56). Then, it distinguishes whether one more pulse signal inputted the control section 15 (step S57). And when heights 5b of the rotary tray 1 is passed and one pulse signal inputs, it distinguishes having detected 5f of rotation halt sections of 2nd tray detection section 5B, and rotation of the rotary tray 1 is stopped (step S58). Thereby, 2nd tray detection section 5B and 2nd disk installation section 4B attend the playback starting position in which pickup was prepared. Therefore, playback of disk No.2 which the user chose is attained. Then, a control section 15 makes memory 14 memorize the data in which number No.2 assigned to the disk laid in 2nd disk installation section 4B are shown (step S59), and ends the actuation at the time of disk selection.
[0033] By the way, if remote control 12 performs selection actuation when a playback starting position wants to reproduce [a user] disk No.3 in the condition that 5th tray detection section 5E corresponding to disk No.5 has stopped, a control section 15 will control rotation of the rotary tray 1, after asking for necessary pulse number z as mentioned above. Since x is larger than y at x= 5 and y= 3 at this time, it progresses to step S53 and asks for z by the formula of [z= 19-4 (x-y)]. Consequently, it turns out that it is the necessary pulse number z= 11 to the disk number demanded. Subsequently, a control section 15 distinguishes whether 11 necessary pulse numbers to the disk number demanded passed, after making rotation of the rotary tray 1 start (step S54) (step S55).
[0034] At this time, when counted value 11 inputs, 3rd tray detection section 5C is reached, and it distinguishes having detected that rotation moderation section 5e, and rotation of the rotary tray 1 is decelerated (step S56). And like the above-mentioned, a control section 15 processes steps S57 and S58, and stops rotation of the rotary tray 1. Thereby, 2nd tray detection section 5B and 2nd disk installation section 4B attend the playback starting position in which pickup was prepared. Therefore, playback of disk No.2 which the user chose is attained. Then, a control section 15 makes memory 14 memorize the data in which number No.2 assigned to the disk laid in 2nd disk installation section 4B are shown (step S59), and ends the actuation at the time of disk selection. In addition, in the gestalt of the above-mentioned implementation, although the rotation moderation sections 5e and 5g and 5f of rotation halt sections formed in periphery section 1b of the rotary tray 1 were made into the crevice and the rotation criteria section 6 was made into heights, even if reverse in these crevice and heights, it is good.
[0035]
[Effect of the Invention] As explained above, among this inventions invention according to claim 1 When the playback command signal which specifies any of the number assigned to the disk installation section they are inputs, After making the rotation drive of the rotary tray carry out in the direction which goes to a small number side from the large number side of the disk installation section, Rotation of a rotary tray is slowed down based on the SUKAUNTO value of a PAL signal, and since it has the composition of stopping rotation further at the input time of the counted value which shows the rotation halt section, the disk installation section of the specified number can be moved to a playback location by the shortest time amount. Moreover, the problem of the playback location gap resulting from the deflection of the rotary tray produced like before when a roll control was carried out by the time amount width of face of a pulse signal, deformation, the forcible stop by the user, etc. is lost, and it is further effective in playback of an assignment disk being performed proper. Moreover, the problem of the playback location gap resulting from the deflection of the rotary tray produced when a roll control was

carried out by the time amount width of face of a pulse signal, deformation, the forcible stop by the user, etc. of invention according to claim 2 is lost, and it is further effective in playback of an assignment disk being performed proper. Moreover, invention according to claim 3 carries out the sequential comparison of the counted value from a counter with the data of memory, after carrying out the rotation drive of the rotary tray. When in agreement, in order to slow down rotation in the rotation moderation location in the disk installation section concerned and to carry out a rotation halt further in a rotation halt location, a rotary tray is correctly rotated from the present rotation halt location to the next playback starting position, and there is an advantage which can make playback start. Moreover, since invention according to claim 4 performs control which makes a power up suspend a rotary tray in a rotation initiation criteria location, it becomes possible [always carrying out rotation initiation from this criteria location], and has the advantage which can avoid malfunction. Moreover, since the rotation criteria section prepares a crevice or heights between the number of the beginning of the disk installation section, and the last number, invention according to claim 5 has the advantage which can be moved to a playback location by the shortest time amount, when rotating a rotary tray clockwise.

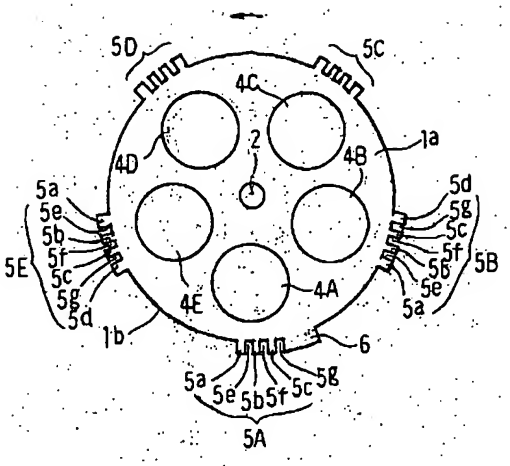
[Translation done.]

6　回転基準部

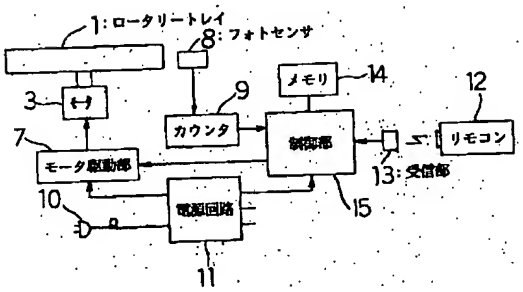
【図1】



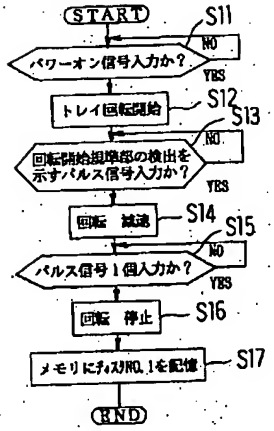
【図2】



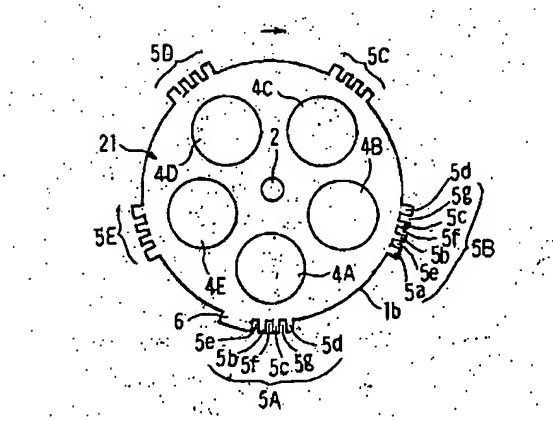
【図3】



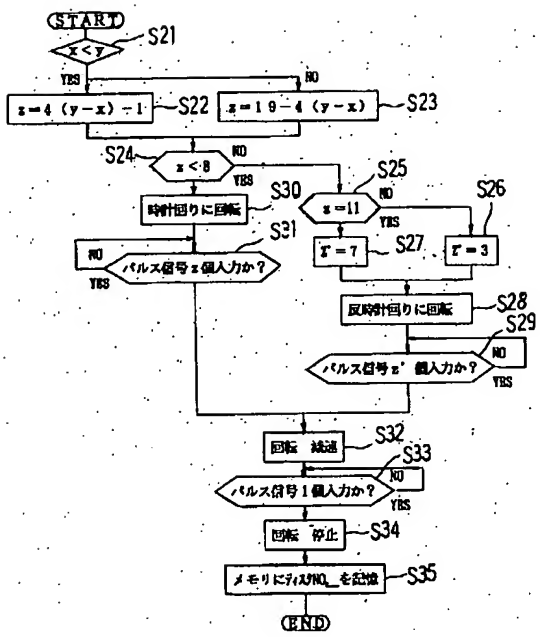
【図4】



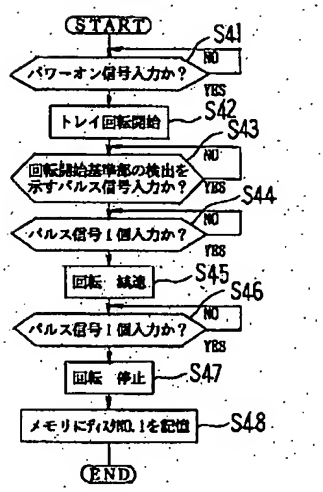
【図6】



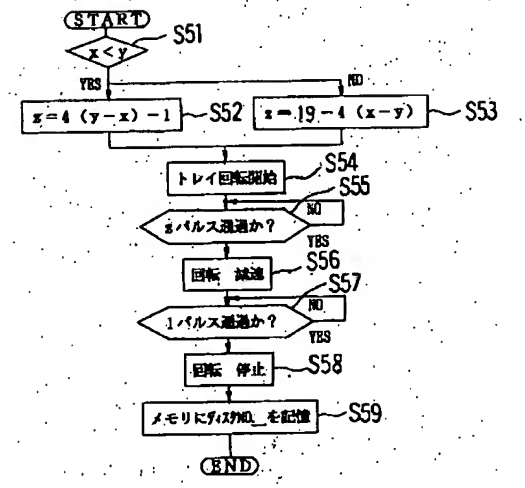
【図5】


START
S21
x < y
YES
NO
z=4 (y-x) -1
S22
z=19-4 (y-x)
S23
S24
z<8
NO
YES
S25
z=11
NO
YES
S26
S30
時計回りに回転
S31
NO
パルス信号z個入力か？
YES
z'=7
S27
z'=3
反時計回りに回転
S28
S29
NO
パルス信号z'個入力か？
YES
回転 減速
S32
S33
NO
パルス信号1個入力か？
YES
回転 停止
S34
メモリにディスクNO._を記憶
S35
END

【図7】


START
S41
NO
パワーオン信号入力か？
YES
トレイ回転開始
S42
S43
NO
回転開始基準板の検出を示すパルス信号入力か？
YES
S44
NO
パルス信号1個入力か？
YES
回転 減速
S45
S46
NO
パルス信号1個入力か？
YES
回転 停止
S47
メモリにディスクNO.1を記憶
S48
END

【図8】


START
S51
x < y
YES
NO
z=4 (y-x) -1
S52
z=19-4 (x-y)
S53
トレイ回転開始
S54
S55
NO
zパルス通過か？
YES
回転 減速
S56
S57
NO
1パルス通過か？
YES
回転 停止
S58
メモリにディスクNO._を記憶
S59
END

* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

CLAIMS

[Claim(s)]
[Claim 1] In the disk regenerative apparatus with which the disk installation section which lays a disk rotates the prepared rotary tray, suspends rotation in which location of said disk installation section, and reproduces the recording information of said disk Each becomes the periphery section of said rotary tray from a crevice, and adjoins and forms in it a group with the rotation halt section which shows the rotation moderation section which shows the rotation moderation location of said rotary tray corresponding to each location of said disk installation section, and a rotation halt location. Between the group corresponding to the first number, and the group corresponding to the 2nd number, among the numbers assigned to said disk installation section, respectively A detection means to prepare the rotation criteria section which consists of a crevice and shows the rotation initiation criteria location of said rotary tray, to detect said rotation moderation section, the rotation halt section, and the rotation criteria section, and to output a pulse signal, When the playback command signal which specifies any of the counter which counts the pulse signal from this detection means, and the number assigned to said disk installation section they are inputs, If the counted value from said counter is the pulse number which shows detection of said rotation criteria section after making the rotation drive of said rotary tray carry out in the direction which goes to a small number side from the large number side of said disk installation section Next, the counted value to input is compared with the number of said assignment disk installation section. The disk regenerative apparatus which slows down rotation of said rotary tray at the input time of the counted value which shows the rotation moderation section of this number, and is further characterized by having the control means which performs control which stops rotation at the input time of the counted value which shows the rotation halt section.
[Claim 2] In the disk regenerative apparatus with which the disk installation section which lays a disk rotates the prepared rotary tray, suspends rotation in which location of said disk installation section, and reproduces the recording information of said disk Each becomes the periphery section of said rotary tray from a crevice or heights, and adjoins and forms in it the rotation halt section which shows the rotation moderation section which shows the rotation moderation location of said rotary tray corresponding to each location of said disk installation section, and a rotation halt location. A detection means to prepare the rotation criteria section which becomes any between class [these] to be from a crevice or heights, and shows the rotation initiation criteria location of said rotary tray, to detect said rotation moderation section, the rotation halt section, and the rotation criteria section, and to output a pulse signal, When the playback command signal which specifies any of the counter which counts the pulse signal from this detection means, and the number assigned to said disk installation section they are inputs, If the counted value from said counter is the pulse number which shows detection of said rotation criteria section after carrying out the rotation drive of said rotary tray Next, the counted value to input is compared with the number of said assignment disk installation section. The disk regenerative apparatus which slows down rotation of said rotary tray at the input time of the counted value which shows the rotation moderation section of this number, and is further characterized by having the control means which performs control which stops rotation at the input time of the counted value which shows the rotation halt section.

[Claim 3] When the playback command signal with which said control means memorizes the number of the disk installation section of the location in memory, and then specifies any of the disk installation section they are at the time of a rotation halt of said rotary tray inputs, After computing the pulse number from said halt location to a playback starting position and carrying out the rotation drive of said rotary tray, the sequential comparison of the counted value from said counter is carried out with the data of said memory. The disk regenerative apparatus according to claim 2 characterized by performing control which slows down rotation of said rotary tray in the rotation moderation location in the disk installation section concerned when in agreement, and carries out a rotation halt further in a rotation halt location.
[Claim 4] The disk regenerative apparatus according to claim 2 with which said control means is characterized by performing control which makes a power up suspend said rotary tray in a rotation initiation criteria location.
[Claim 5] The disk regenerative apparatus according to claim 2 or 3 with which said rotation criteria section is characterized by coming to be prepared between the number of the beginning of said disk installation section, and the last number.

[Translation done.]